Facilities Program

Purebred Beef Unit Relocation

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Introduction

The current Purebred Beef facilities located just south of Kimball Avenue were built in 1957. Since initial construction of these facilities, there have been significant changes: in animal care and research; in surrounding land uses, in assigned acreage; and in deterioration of facilities. These changes necessitate replacement of the facilities in a new location. During the 58 years since the facility was built, the campus and community has built up around it creating incompatible land uses. Residential, office and research facilities now surround the program. The most recent addition just to the south of Purebred Beef is the National Bio and Agro-Defense Facility (NBAF).

The Purebred Beef Unit will continue to be a central element in the teaching, research and extension activities within the Department of Animal Sciences and Industry (ASI) as faculty and staff work to achieve the shared goals outlined in K-State 2025. In particular, research and teaching work at the proposed unit will play a central role in the department's attainment of goals to improve and expand dryland livestock production in the state. Improvements in genetics, selection practices and management systems as well as a broader understanding of beef cattle feed and production efficiency will aid in development of new livestock production systems for beef producers in Kansas. ASI is one of the premiere undergraduate animal science programs in the US and maintains a strong focus on beef production.

Beef cattle production is an important part of the Kansas economy, especially in rural areas. According to the 2012 US Census of Agriculture (USDA-NASS), cattle and calf production accounts for 55% of Kansas agricultural receipts ($10.15B). Kansas ranks 5th among states for beef production and 7th for inventory of beef cows. Providing experienced and well trained workers to this segment of the Kansas economy is essential for the continued growth and prosperity of rural Kansas.

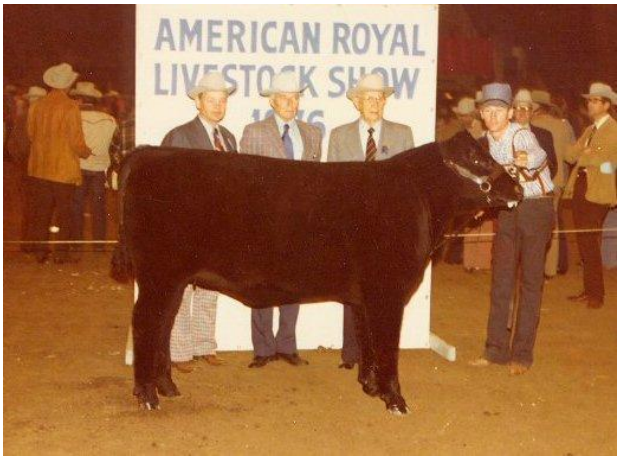
Purebred Beef Facilities Background

Kansas State has a long history of using live animals in teaching students how to care for, breed, and market animals. In fact, the first structure on what is the current campus was a large barn to house livestock which had been provided for by the Kansas legislature of 1872. This was followed by several different barns and sheds that housed horses, dairy cattle, beef cattle, hogs, sheep and poultry. Produce from the purebred beef cattle herds were housed in a commodious stone structure which was located just north of where Weber Hall now stands. On August 28, 1955, the barn caught fire and burned to the ground.

The legislature appropriated funds immediately for a replacement structure. A site off Kimball Avenue was chosen because it was on top of the hill, which would allow for excellent air movement and circulation, and the adjoining pens would have excellent drainage preventing their becoming "loblollies" during wet weather.

The existing barn was completed in 1957 and has been used for the maintenance of class work animals since. Some of the offspring of the purebred beef herd have been fitted, shown and sold. It is fair to say that many state and national champions have gone through the barn. The barn has an apartment for students to live and work at the barn. In addition, other students provide hourly labor in caring for the

cattle. Most importantly, animals from the Purebred Beef Unit are often used in a wide range of teaching activities providing hands-on animal experiences for many of the 1,200 undergraduate students in the department of Animal Science and Industry.



Kansas State University's purebred beef herd was established in 1881 with the purchase of an Aberdeen-Angus heifer, Eyebright 4th 7131 (7446) from the Ontario Agricultural College. A Hereford bull and heifer, Parley 30782 and Miss Beau real 7th 30781, were purchased from George Fowler, Maple Hill, KS in 1888. These two breeds made up the herd until it was disposed in 1897 due to tuberculin test reactions and an order from the Board of Regents. The Regents order was the result of concern across the state that K-State's cattle should be "practical farmer's livestock" instead of purebred animals. The herd was then reestablished in 1901 with seven different breeds of beef, dairy and dual purpose cattle.

The first production sale was held in 1977. It was unique to the nation because it was a university sale and was organized and managed by students. A sale has been held each year since 1977. Early sales rotated between Angus, Simmental, and Hereford cattle and included females. In 1987, it was decided to sell all breeds in one annual bull sale.

Probably K-State's most distinguished animal was the Angus heifer, Manhattan Gal. Her national reputation was the momentum behind the first Special "K" Edition sale. Manhattan Gal was the Supreme Champion Individual at the American Royal, North American Livestock Exposition and the National Western Stock Show. The highest selling individual in a Special "K" sale was Slammer K 04147, a Hereford bull. He was purchased in 1981 by C K Hereford Ranch, Brookville, KS, for $12,500. The highest selling female was Miss Northern K 127. She was purchased in 1977 by R & J Ranch, Briggs, TX, for $7,500.

In the 58 years since the current facilities were constructed, best management practices for animal care and handling, feeding, reproduction and calving management have changed substantially. Similarly, beef cattle housing, livestock handling and feeding facilities have improved considerably. The current outdated facility hinders instruction and demonstration of these contemporary practices. Construction of new facilities provides the opportunity to strengthen the student experience through enhanced teaching opportunities for many of our classes and laboratory sections in a safe, modern animal housing and management facility similar to what our student might experience upon entry in the workforce.

Purebred Beef Mission Statement

Our mission is to provide undergraduate and graduate students with practical experience in breeding, feeding, management and marketing of purebred seedstock as well as give livestock selection and general animal science courses the opportunity to evaluate quality cattle. Additionally, the unit seeks to conduct leading research in the areas of genetic improvement, nutrition and management of beef cattle for a range of economically important traits and serve as a demonstration facility highlighting the best management practices in beef production for breeding, genetics, reproductive management and nutrition. Kansas State University Purebred Beef Unit annually runs nearly three hundred breeding-age purebred Angus, Hereford, and Simmental cows on 4,000 acres of native bluestem grass to meet this critical need.

Enrollment in Animal Science and Industry continues to grow. Over the last 7 years, enrollment has increased by nearly 500 students. Part of ASI program growth, particularly from out of state students, is driven by the hands-on educational opportunities provided by our animal resources. Students, particularly those from urban and suburban backgrounds that enter an ASI major without substantial animal experience, benefit immensely from the animals housed in a Purebred Beef Unit. It is likely that K-State will continue to attract students as other land-grant institutions are shrinking inventories of livestock or moving animal facilities further from campus reducing opportunities for using animals in teaching.

Each year hundreds of students utilize cattle raised at this unit. The herd provides numerous opportunities to demonstrate modern breeding programs for genetic improvement of seedstock, using tools like performance testing, genomic testing, artificial insemination, embryo transfer, and ultrasound carcass evaluation.

Cattle are employed for teaching purposes in classes such as Livestock Sales Management, Pregnancy Diagnosis, Bovine Calving, Beef Science, and Advanced Beef Science and used for competition in the annual Little American Royal. A portion of the cattle that are produced in this herd are merchandized in the annual Legacy Bull and Female Sale held the first Friday in March. This sale is unique to the nation because it is engineered entirely by students to give them hands-on, practical experience in purebred cattle marketing.

In addition to the Unit's critical role in supporting the departments teaching mission, cattle at the Unit are frequently utilized in a wide range of basic and applied research trials. Research conducted at the Unit has included reproductive physiology work to improve estrus synchronization protocols used by beef producers. Animal breeding and genetics faculty have utilized animals from this resource to explore the effects of selection for improved feed efficiency in beef cattle. Other work has included research focused on cloning technology, synchronized artificial insemination, feed additive research, residual feed intake, and DNA marker research.

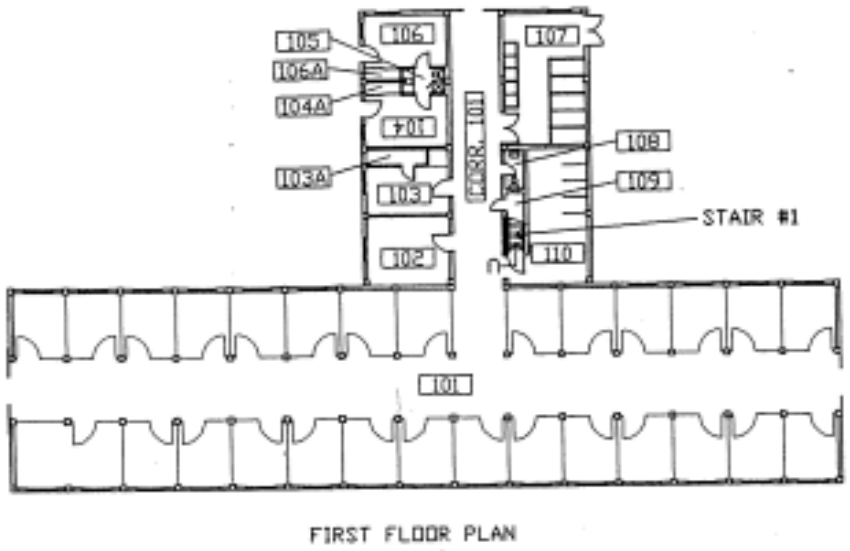
Current Conditions & Space Summaries

The current conditions justification for relocating program:

1. Incompatible land use with NBAF to the south, residential apartments to the east, research park to the SE, retirement community to the NE;
2. Loss of land due to surrounding recent developments; loss of dry lot heifer and bull development pens to south of existing unit due to NBAF construction.
3. Facilities are were built in 1957, now 58 years old and needing replacement;
4. Program changes in animal care and research.

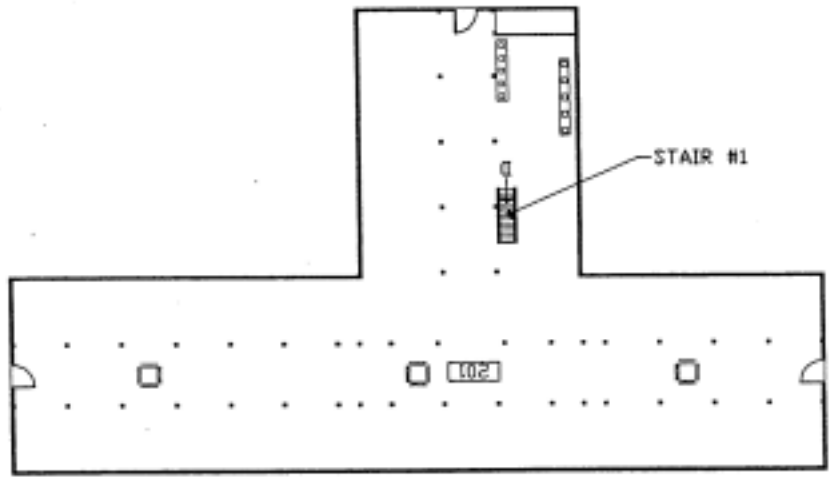
Aerial Photograph of Existing Facilities

The existing facilities consist of a two story barn, equipment shed, and fenced dry lots. It is adjacent to approximately 150 acres to the north on which several other ASI facilities are located including the Stanley Stout Livestock Marketing center which is programmatically tied to Purebred Beef Unit. The existing barn is 14,200 sf, equipment shed is 1,500 sf.



FIRST FLOOR PLAN

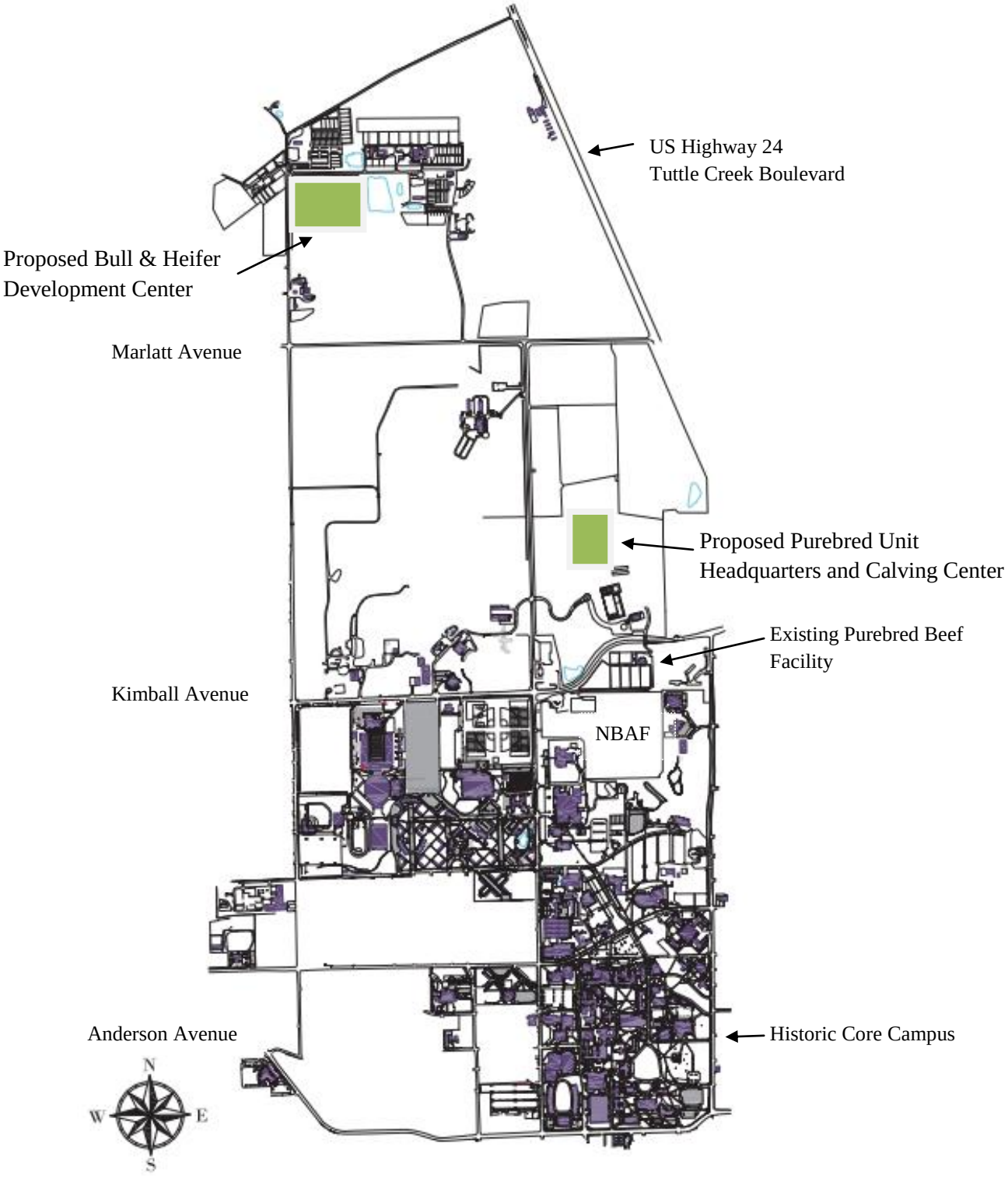
Existing Purebred Beef Barn



LOFT PLAN

Existing Purebred Beef Barn

Proposed Sites Location Map



Project Description

The Purebred Beef unit consists of two primary components; the Headquarters and Calving Center; and the Bull and Heifer Development Center. In consideration of the conditions and administration of these centers, they are proposed to be sited at two different locations. The Headquarters and Calving Center will be located closer to campus, near the Stanley Stout Center. The animals will primarily be in pasture conditions. The Bull and Heifer Development Center will be primarily a dry lot condition and located adjacent to existing Beef Cattle Research Center.

Purebred Beef Unit Headquarters and Calving Center

This facility is proposed to be located east of Denison Ave and north of Kimball Ave, generally facing the south. This program will include the calving and maternity barn, multipurpose space, office spaces, and an apartment for caretakers. Animal holding pens, pasture space, processing, feed storage, and shop will be adjacent to this facility.

The architectural character of this facility shall be similar in form, materials and colors to the adjacent Stanley Stout Center.

Facility Components Descriptions:

I.		**Headquarters**	SF
	A.	Meeting Room Open room with conference table and seating for approximately 12 people. Flooring concrete. Walls finished and include white board. Ceiling open. HVAC.	270
	B.	Multi Purpose Room Animal preparation, demonstration, and calving area. Flooring concrete, rough finish with floor drains. Walls suitable for wash down and cattle safe. Two roll up doors. Ceiling open. HVAC and large ceiling fans. Hose connections with cold and hot water. Pull down electrical.	3,600
	C.	Managers Office Working space for headquarters manager. Flooring concrete. Walls finished. Ceiling finished. HVAC. Work desk, filing cabinet, table, and chairs.	170
	D.	Data Entry Lab Flexible work stations for six people. Flooring concrete. Walls finished. Ceiling finished. HVAC.	200

		Modular work stations for six, chairs, filing cabinet.	
	E.	Work Room and Storage Work room and break room. Flooring concrete. Walls finished. Ceiling finished. HVAC. Shelving, work table, shop sink, refrigerator for food, refrigerator for non-food, clothes washer & dryer, kitchenette with microwave and table with six chairs.	300
	F.	Restrooms Male, female, and family rooms. Flooring concrete. Walls finished. Ceiling finished. HVAC. Drinking fountain.	360
	G.	Caretakers Apartment Apartment with two bedrooms, kitchen/living room, bathroom, laundry. Flooring vinyl tile. Walls finished. Ceiling finished. HVAC. Apartment furnished with beds, dressers, kitchen table with chairs, living room furniture, clothes washer and dryer, dishwasher, refrigerator, oven and stove, microwave.	900
	H.	Utility/Telecom Room Telecom, HVAC, water heater and mop sink. Flooring concrete. Walls finished. Ceiling finished.	200
	I.	Corridor and non assignable space Flooring concrete. Walls finished. Ceiling open. HVAC.	1000
		Headquarters Total SF	7000
II.		**Calving Center**	
	A.	Calving Barn Open floor plan with 15 portable panel pens. Flooring (6-8") waste lime. Walls washable and cattle safe. Ceiling open. Portable panels for (15) 12'x12' pens. Ventilation system but no heat or AC. Water. Hair dryers. Day lighting. (3) rollup doors, one side of space with sliding doors.	5,000
	B.	Processing Cattle intake processing.	1,700

		Flooring concrete. Walls insulated. Ceiling open. Radiant heat. Squeeze chute, large shop sink, hose bibs, refrigerator, and 2 roll up doors. Attached 15'open sided lean-to for covered storage.	
	C.	Shop Equipment workshop. Flooring concrete. Walls insulated. Ceiling open. Radiant heat. Day lighting. 2 rollup doors. Work bench. Attached 15'open sided lean-to for covered storage.	1,700
	D.	Hay Barn Hay storage. Flooring waste lime floor (6-8" depth). Walls unfinished with one side open. Ceiling open. Lights. Attached 15'open sided lean-to for covered storage.	2,600
		Calving Center Total SF	11,000
III.		**Site & Infrastructure Facilities**	
	A.	Utilities including electricity, water, natural gas, fiber optic, sanitary sewer.	
	B.	Bulk Bins –2 ton capacity bins (2)	
	C.	Load Out Chutes for Pickup and Semi Trucks	
	D.	Pens with pipe fencing and gates for 200 head of cattle (200 sq. ft/head; ~40,000 sq ft) with waterers and feed bunks. Lighting provided with wall packs from adjacent buildings. Dirt surfacing.	
	E.	Pasture space for 200 head of cattle with pipe fence divided into four areas, 400 LF of feed bunks and waterers. Loafing sheds/wind breaks.	
	F.	Site will be finished with asphalt drive, concrete landings at building entrances, building sign, site lighting, native grass seeding of disturbed areas, low maintenance natural landscaping at main entrance, storm water detention, and dumpster pad.	

Purebred Beef Unit Bull and Heifer Development Center

This facility is proposed to be located adjacent to existing Beef Cattle Research Center, which is in the Animal Sciences and Industry facilities north of Marlatt Avenue. The proposed building will be generally facing the south. This program will include covered feed bunks and an automated individual animal feed intake monitoring system situated in a dry lot condition. The facility will include animal holding pens, processing area.

The architectural character of this facility will be similar to the adjacent building in the Beef Cattle Research Center.

Facility Components Descriptions:

I.		**Feed Structure & Feed Intake System**	SF
	A.	Feed Building Contains the feed intake system with a 256 head capacity. Metal structure 36' by 220' with 16' sidewall, enclosed on ends and north side, with rollup door on each end. Flooring has 16' wide concrete pad the length of the building with 10' of waste lime on each side. Lights.	8,000
	B.	Feed Intake System GrowSafe or like system with 32 nodes and a 256 head capacity.	
	C.	Dry Lot Pipe fencing for 8 evenly sized pen areas. Approximately 52,000 SF of dry lot with 7 waterers with electricity on concrete pads.	
		Feed Structure Total SF	8,000
II.		**Site & Infrastructure Facilities**	
	A.	Utilities including electricity, water, lagoon waste system.	
	B.	Squeeze Chute	
	C.	Site will be finished with gravel drive, concrete landings at building entrances, building sign, site lighting, native grass seeding of disturbed areas, and storm water detention.	

Project Funding

This project is funded with bonding funds committed from the State of Kansas to the NBAF project. Bonding is expected to be completed by the state spring of 2015.

Maintenance Funding

The funding for maintenance will be allocated from the K-State Department of Animal Sciences restricted fee revenues. Using KBOR formula with the FY 2015 revisions, this building will require .25 FTE for salaries of $9,300. The utility rate is calculated at $68,770 (7,000 GSF conditioned space @ $3.50 plus 19,000 GSF unconditioned space @ $2.33) and other operating expenditures at $6,500.

The total annual cost for maintenance and operations of this facility is estimated at $84,570.

Timeline/Schedule

Program Completed	February 2015
A/E Selection Completed	May 2015
Design Completed	December 2015
Bid	March 2016
Construction Completed	December 2016
Clearing Existing Site	January 2017

Project Budget

Construction

Construction	$3,750,000
Contingency	$375,000
Sub Total	$4,125,000

Other Costs

Demolition of Existing Site	$175,000
Study Fees	$50,000
AE Fees	$420,000
OFPM Fees	$20,000
Planning Fees	$30,000
Survey & Testing Fees	$120,000
Other Project Costs	$260,000
Sub Total	$1,075,000

Total Project Cost	$5,200,000